



**Carnegie Mellon
Software Engineering Institute**

Pittsburgh, PA 15213-3890

SCAMPI B&C Tutorial

**Software Engineering Process Group Conference
SEPG 2004**

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Outline

Overview

Differentiating SCAMPI Family Members

Implementation Details

Operational Scenarios

Program Overview and Project Status

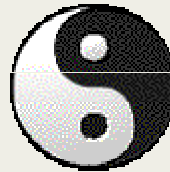


Motivation for Appraisal



Organizational Intervention

- Assessing culture for change
- Building local championship
- Preparing for improvement
- Finding the stimulus for change



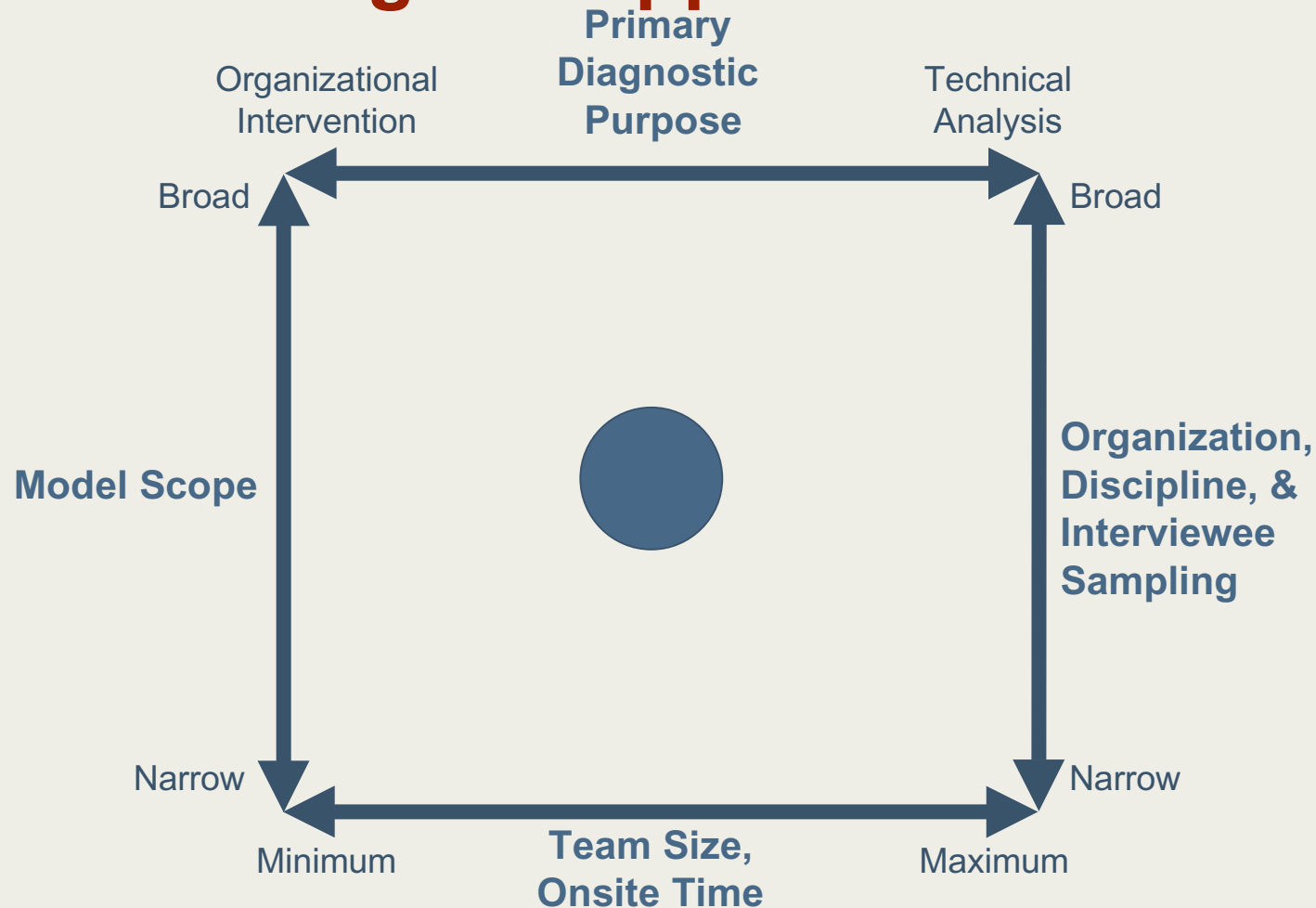
Technical Analysis

- Evaluating detailed practices
- Rigorous data collection
- Carefully defined scope
- Potential external visibility





Tailoring the Appraisal Process





Appraisal Use/Purpose: Examples



Formulating Our
Winning Strategy



Fixing Immediate
Problems



Exploring Goals for
Improvement &
Training Staff



Appraisal Outcomes: Examples -1



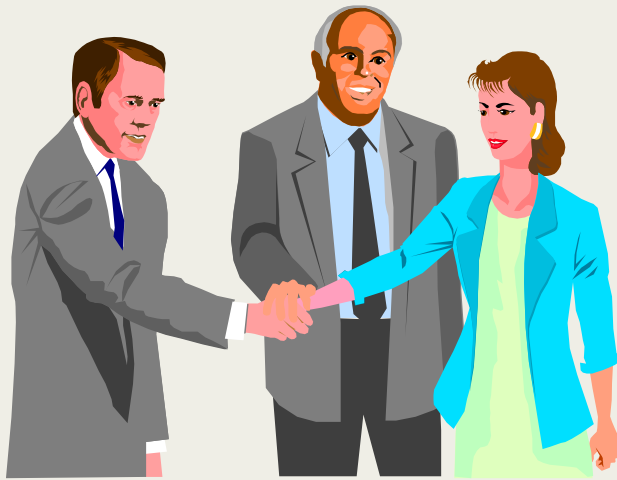
Making Sure Our
House is in Order



Charting Progress
Against Our Plan



Appraisal Outcomes: Examples -2



Recognize Progress
and Celebrate Success



Find New
Challenges
to Conquer



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Differentiating SCAMPI B&C vs. ARC B&C

SCAMPI B&C methods differ from ARC Class B&C

- Defined based on focus of application
- Membership in a family of integrated methods
- Shared definitions of inputs, data structure and outputs
- Upward compatibility where desired
- Range of defined tailoring to fit differing situations

Not all possible tailoring options in ARC class B & ARC class C methods will be included in the set of allowable tailoring options in SCAMPI B & SCAMPI C



Distinguishing Characteristics

The primary distinction between the three members of the SCAMPI family lies in the focus of their application

- SCAMPI C is focused on appraising “Approach”
- SCAMPI B is focused on appraising “Deployment”
- SCAMPI A is focused on appraising “Institutionalization”



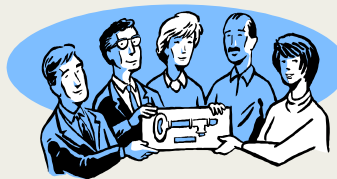
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Approach SCAMPI C



Deployment SCAMPI B



Institutionalization SCAMPI A

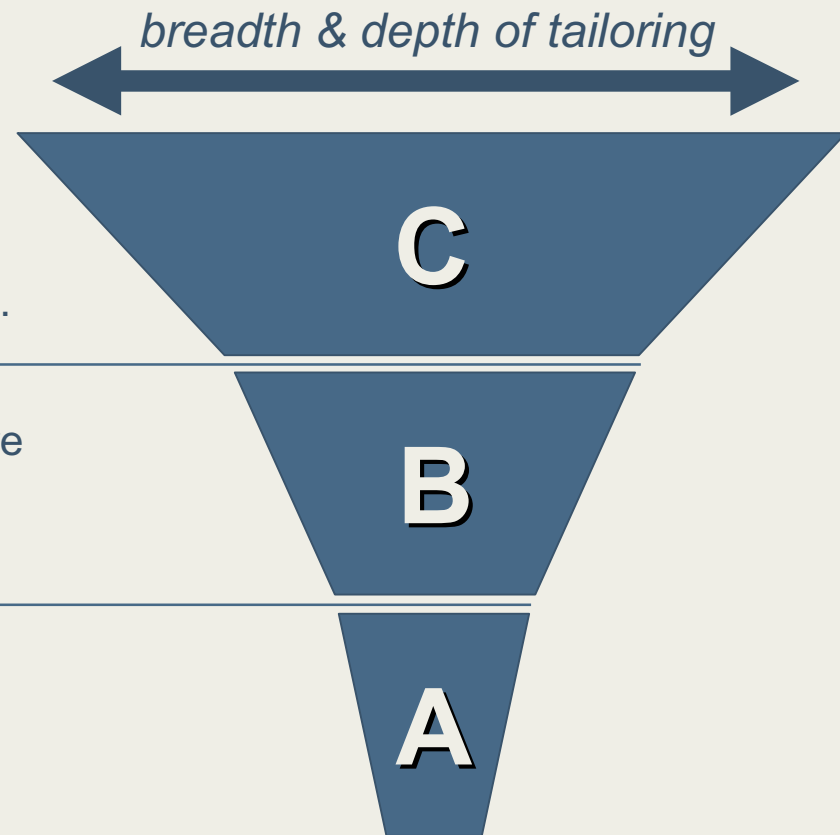


Non-Linear Differences in Tailorability

SCAMPI C, with a primary focus on approach, can take on a very wide range of forms – including some examination of deployment.

SCAMPI B, with a primary focus on deployment, is somewhat more constrained by corroboration requirements from the ARC.

SCAMPI A, the most rigorous method, is intended to be implemented within a narrowly defined set of standards.





SCAMPI C – Focus on “Approach”



Appraise practices without looking at implementation

- Discuss implementation without looking at it
- More cursory examination of what people do
- Plan for future implementation

Adequacy of concept is the focus

- Examine fidelity to practices in the CMMI
- Brainstorm possible implementations
- Anticipate ROI in context

Sufficient coverage is practically irrelevant

- Seek pockets of best practice in the organization
- Focus on most compelling model content



SCAMPI C – Examples of Usage



Organizations' first look at CMMI, or a part of the model

Rapid appraisal to gather data without using interviews

Capturing a thumbnail sketch of a contractor's process

Review of a new baseline process before deployment

Planning to fill a gap identified in a previous appraisal

Brainstorming how to transition from another model



SCAMPI B – Focus on “Deployment”



Examine how selected approaches fit in context

- Understand variation in actual practice
- Capture business drivers that lead to tailoring
- Identify needed course-correction

Understanding diversity of implementation is the focus

- Involve technical staff in dialogue about what “works”
- Examine direct artifacts resulting from implementation
- Seek input to update the approach

Focus coverage criteria with business drivers

- Validate the most beneficial model elements
- Brainstorm remaining model elements



SCAMPI B – Examples of Usage



Gathering best practices to define an OSSP

Checking the status of deployment to new projects

Preparing for a benchmarking appraisal

Mini-appraisal to sustain momentum and buy-in

Incremental appraisals monitoring enterprise deployment



SCAMPI A – Focus on “Institutionalization”

Understand the impact of deploying the approach

- Characterize the ‘pervasiveness’ of practices
- Rate goal satisfaction
- Capture business value achieved so far

Institutionalization of ‘goal-satisfying’ practices is the focus

- Understand barriers to deployment
- Seek performance enhancements
- Communicate enablers for improvement

Sufficient coverage with highly reliable data

- Organizational coverage avoids missed opportunities
- Model scope that provides a meaningful milestone



SCAMPI A – Examples of Usage



Benchmarking to document achievement

Rigorous basis for findings to support risk assessment

Documented and defensible scope of generalizability

- intended to support 'reuse' over a limited time-frame

Usage expected to become more narrow:

- SCAMPI B to cover notable % of current enactments
- Enforcement of rigorous standards is increasing
- Cost expected to decrease with history of B&C use



Comparing SCAMPI B&C with A

Handbook for Implementing SCAMPI B&C is in draft

Names of processes documented for SCAMPI A are used

Method Definition Document for SCAMPI A contains

- Phases: Processes: Activities

The *Handbook* currently contains

- Phases: Processes

The following slides reference the MDD for SCAMPI A

- Much of the intent in A applies to B&C
- Many of the activities apply at a higher level



Appraisal Input and Appraisal Plan

MDD Part II: Process Definitions

SCAMPI B

SCAMPI C

1.1. Analyze Requirements

1.1.1. Determine Appraisal Objectives

Applies

Applies

1.1.2. Determine Appraisal Constraints

Applies

Applies

1.1.3. Determine Appraisal Scope

Applies

Applies

1.1.4. Determine Outputs

Applies

Applies

1.1.5. Obtain Commitment to Appraisal Input

Applies

Applies

1.2. Develop Appraisal Plan

1.2.1. Tailor Method

Applies

Applies

1.2.2. Identify Needed Resources

Applies

Applies

1.2.3. Determine Cost and Schedule

Applies

Applies

1.2.4. Plan and Manage Logistics

Applies

Applies

1.2.5. Document and Manage Risks

Applies

Applies

1.2.6. Obtain Commitment to Appraisal Plan

Applies

Applies



Team Composition & Objective Evidence

MDD Part II: Process Definitions

SCAMPI B

SCAMPI C

1.3.Select and Prepare Team

1.3.1.Identify Team Leader

Applies

Applies

1.3.2.Select Team Members

Applies

Optional

1.3.3.Prepare Team

Applies

Optional

1.4.Obtain and Analyze Initial Objective Evidence

1.4.1.Prepare Participants

Applies

Applies

1.4.2.Administer Instruments

Optional

Optional

1.4.3.Obtain Initial Objective Evidence

Optional

Optional

1.4.4.Inventory Objective Evidence

Applies

Optional

1.5.Prepare for Collection of Objective Evidence

1.5.1.Perform Readiness Review

Applies

Applies

1.5.2.Prepare Data Collection Plan

Applies

Applies

1.5.3.Replan Data Collection

Optional

Optional



Examining and Processing Evidence

MDD Part II: Process Definitions

SCAMPI B

SCAMPI C

2.1.Examine Objective Evidence

2.1.1.Examine Objective Evidence from Instruments

Optional

Optional

2.1.2.Examine Objective Evidence from Presentations

Optional

Optional

2.1.3.Examine Objective Evidence from Documents

Applies

Optional

2.1.4.Examine Objective Evidence from Interviews

Applies

Optional

2.2.Verify and Validate Objective Evidence

2.2.1.Verify Objective Evidence

Applies

Applies

2.2.2.Characterize Implementation of Model Practices

Applies

Applies

2.2.3.Validate Practice Implementation Gaps

Applies

Optional



Documenting Data and Results

MDD Part II: Process Definitions

SCAMPI B

SCAMPI C

2.3.Document Objective Evidence

2.3.1.Take/Review/Tag Notes

Applies

Optional

2.3.2.Record Presence/Absence of Objective Evidence

Applies

Applies

2.3.3.Document Practice Implementation Gaps

Applies

Optional

2.3.4.Review and Update the Data Collection Plan

Applies

Optional

2.4.Generate Appraisal Results

2.4.1.Derive Findings and Rate Goals

N/A

N/A

2.4.2a.Determine Process Area Capability Level

N/A

N/A

2.4.2b.Determine Satisfaction of Process Areas

N/A

N/A

2.4.3a.Determine Capability Profile

N/A

N/A

2.4.3b.Determine Maturity Level

N/A

N/A

2.4.4.Document Appraisal Results

Applies

Applies



Delivering and Packaging Outputs

MDD Part II: Process Definitions

SCAMPI B

SCAMPI C

3.1.Deliver Appraisal Results

3.1.1.Present Final Findings

Applies

Applies

3.1.2.Conduct Executive Session(s)

Optional

Optional

3.1.3.Plan for Next Steps

Applies

Applies

3.2.Package and Archive Appraisal Assets

3.2.1.Collect Lessons Learned

Applies

Applies

3.2.2.Generate Appraisal Record

Applies

Applies

3.2.3.Provide Appraisal Feedback to CMMI Steward

Applies

Applies

3.2.4.Archive and/or Dispose of Key Artifacts

Applies

Applies



Detailed Content

For each process, the *Handbook* contains:

- Required Practices
- Parameters and Limits
- Guidance

Because the SCAMPI B&C methods are intended to be less rigorous and more flexible, it is not expected that every activity required in SCAMPI A would have an analogous requirement in SCAMPI B and SCAMPI C



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Approach, Deployment & Institutionalization

SCAMPI C can limit the investigation to “approach”

- Examining the *intended* process

SCAMPI B can limit the investigation to “deployment”

- Examining the *implemented* process

SCAMPI A can focus on how implementation meets intent

- Examining the *institutionalization* of implemented practices, based on the organization’s intended practices



Practice Characterization

SCAMPI C : Fidelity

- Characterize the extent to which the approach is judged to be consistent with the intent of the CMMI

SCAMPI B : Risk

- Characterize the extent to which the enacted practice reflects the intent of the CMMI, without regard to institutionalization and limitations in sampling

SCAMPI A : Implementation

- Characterize the extent to which the planned and enacted practice, in a sufficient sample of an organization, are institutionalized in a way to support satisfaction of the relevant goal within the CMMI.



Characterizing Fidelity – SCAMPI C

The appraiser, or appraisal team will characterize the extent to which the approach (planned or deployed) is judged to be consistent with the intent of the CMMI.

Hi Fidelity: The intent of the model practice is judged to be adequately addressed in the set of practices (planned or deployed) – in a manner that supports achievement of the goal in the given process context.

Medium Fidelity: The intent of the model practice is judged to be partially addressed in the approach – and only limited support for goal achievement is evident.

Lo Fidelity: The intent of the model practice is judged absent, or inadequately addressed in the approach – goal achievement is judged unlikely because of this absence or inadequacy



Characterizing Risk – SCAMPI B

The appraisal team will characterize the extent to which the set of enacted practices reflects the intent of the CMMI, without regard to breadth and depth of deployment.

Lo Risk: The intent of the model practice is judged to be adequately addressed in the implemented set of practices examined – in a manner that would support goal achievement, if the practice were deployed across the organizational unit.

Medium Risk: The intent of the model practice is judged to be partially addressed in the set of implemented practices – some gaps or issues were identified, which might threaten goal achievement if the deployment occurred in this way across the organizational unit.

Hi Risk: The intent of the model practice is judged to be absent or poorly addressed in the set of implemented practices – gaps or issues that will prevent goal achievement, if the deployment occurred in this way across the organizational unit, were identified.



Practice Implementation Indicators

Practice Implementation Indicators are a hallmark of the SCAMPI family of appraisals

There are three uses for PIIs

- Organize and categorize input data
- Structure used by the team to inventory and analyze data during the conduct of the appraisal
- Basis for summarizing validated Objective Evidence as a result of the appraisal conduct



Required Outputs: SCAMPI B&C

Appraisal input

Appraisal plan, annotated with actual data for

- time, effort and cost
- model coverage
- organizational coverage

Appraisal record

Appraisal Disclosure Statement (ADS)





Expected Outputs: SCAMPI B&C

Statements of strengths and/or weaknesses relative to model practices, goals or other components.

Characterizations of model practices that identify differences across

- model components covered in the appraisal
- organizational units included in the appraisal





Optional Outputs: SCAMPI B&C

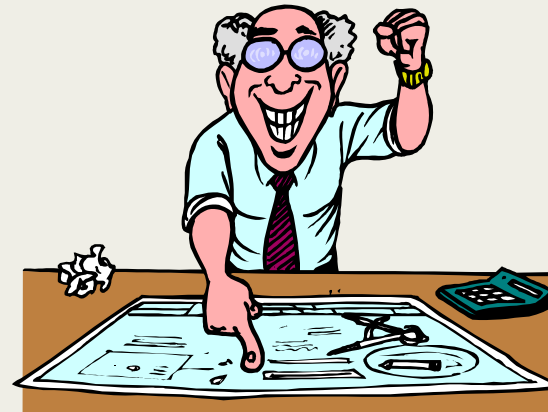
Detailed data summaries
related to a pre-existing:

- process improvement target
- performance contract
- remedial improvement action
- set of risk areas in a contract

Orientation and/or training for:

- improvement champions
- technical and managerial staff
- sponsors new to CMMI

A 'watershed' event for a group
of co-workers.





Appraisal Reporting Techniques

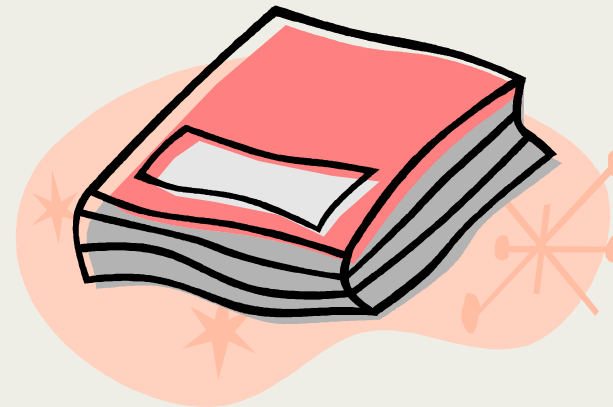
Formal presentations using “slides” - words and graphics.



Facilitated, interactive, presentations with specific participants.

Group or individual meetings involving appraisers and participants.

Written material, ranging from ‘bulleted’ summaries in presentation slide format to a full detailed report.





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Using Upwardly-Compatible SCAMPIs

Integrated Suite of Appraisal Methods

- outputs upwardly compatible, feeding the next event
- conduct of B&C reduces effort of the subsequent A
- tracking progress over time with consistent baselines
- model interpretations resolved in low-pressure setting
- PIIDs evolve with deeper understanding

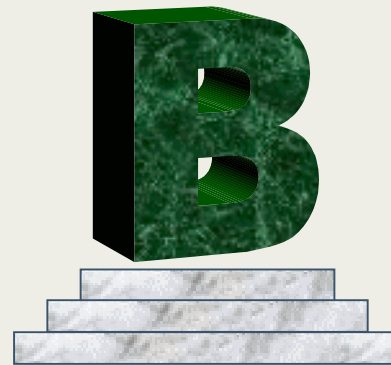




“Stand-Alone” Usage of Methods

Not every appraisal is an element of a particular sequence

- organizations have process monitoring strategies
- acquisition contexts may afford fewer interactions
- if you don't care about levels, you may never do an A
- transition from SW-CMM to CMMI isn't starting over
- quality assurance groups might use mini-appraisals
- many custom applications supported by the methods





Appraisal Archetypes

The following 7 typical appraisal types are being used to identify a range of appraisal applications.

The new SCAMPI B and SCAMPI C methods will accommodate a wide range of appraisal types, through defined tailoring options.

The Archetypes provide insight about the priorities that match sets of tailoring options.





Getting-Started Intervention

Purpose: An organizational intervention to educate and motivate people to initiate a CMMI-based process improvement program.



Description: Expert-directed method with emphasis on the participation of affected groups in facilitated sessions - with no focus on sufficiency of coverage. The emphasis is on the organization's priorities, not those of the model.





Mini Appraisal

Purpose: An abbreviated version of a benchmarking appraisal used to provide data and experience. The purpose is often a dress-rehearsal for the benchmarking appraisal. Generating PIIDs as well as strengths and weaknesses is the typical motivation. Data generated will support action planning.

Description: Team-based, data intensive method that emphasizes the use of Objective Evidence - with reduced focus on data sufficiency.

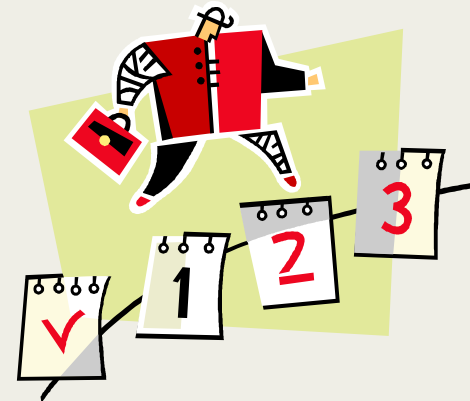




Gap Analysis

Purpose: Examine a narrowly defined scope (of the model or the organization) for the purpose of identifying the high-priority issues to be resolved in order to reach a desired state.

Description: Expert-based, data-intensive method with emphasis on identification of weaknesses - and a strong focus on sufficiency of coverage.

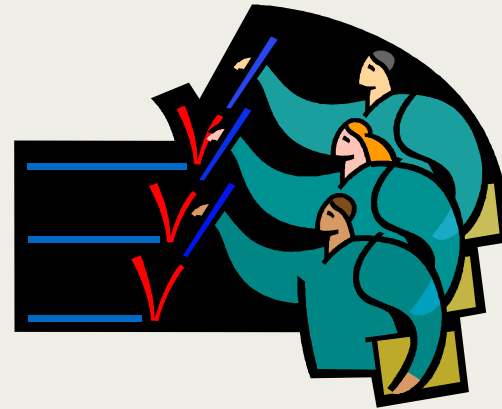




Improvement Monitoring

Purpose: Track implementation of process improvement actions in an organizational unit that has previously undergone an appraisal.

Description: Highly tailored method that emphasizes identifying status of changes in processes - with more limited focus on sufficiency of coverage. The focus of the appraisal is driven by the on-going improvement program, and the plan that drives it.





Delta Appraisal

Purpose: Confirm corrective actions resulting from a previous appraisal.

Description: A method that emphasizes confirming specific changes in processes. These changes prevented attainment of some baseline on a previous appraisal. This appraisal must assure that the other parts of the baseline have not 'eroded' and that the changes made integrate with the rest of the baseline.

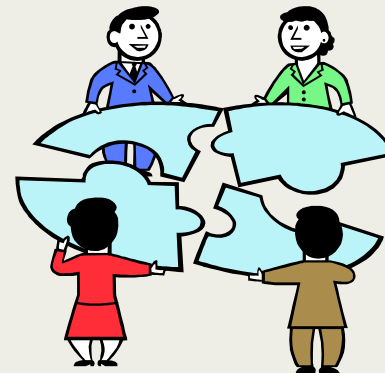
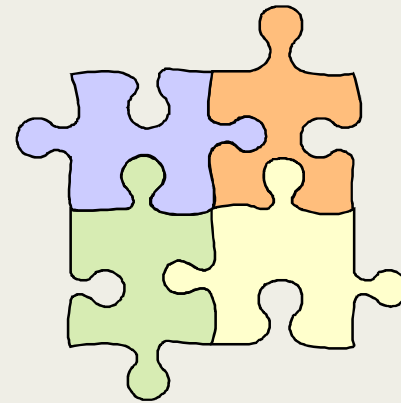




Incremental Appraisal

Purpose: Building a profile of results across a broad model and/or organizational scope – over time.

Description: Expert-directed or team-based, data intensive method that emphasizes use of objective evidence - with strong focus on sufficiency of coverage (in narrow increments).

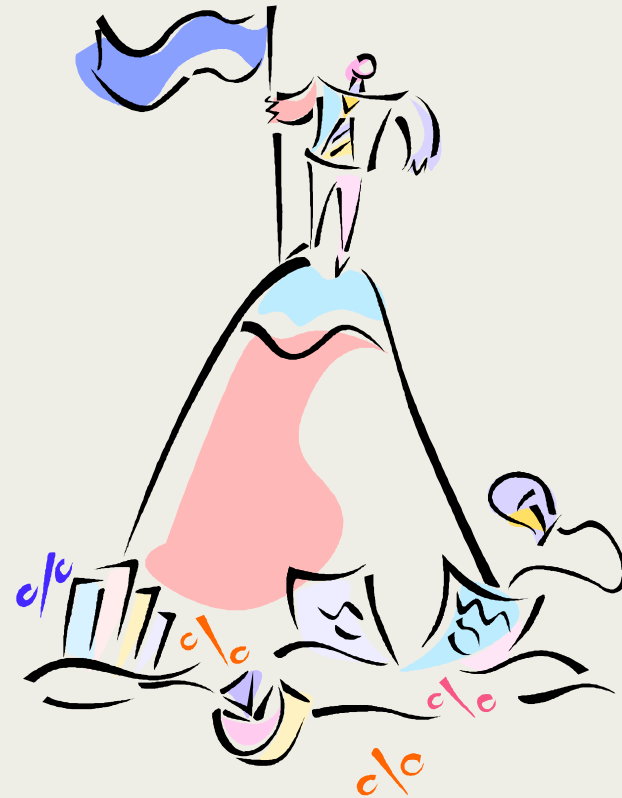




Benchmarking Appraisal

Purpose: Document a frequently sought, high level, benchmark for an organizational unit.

Description: Expert-directed and team-based, data intensive, broad scope, deep coverage method that emphasizes use of objective evidence - with strong focus on sufficiency of coverage.





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SCAMPI B&C Lead Appraisers-1

Eligibility:

Employees of SEI SCAMPI Partners

- under supervision of a SEI qualified supervisor (SCAMPI A Lead Appraiser authorized by SEI)

Requirements for New SCAMPI B&C LA:

Participate in 2 SCAMPI B appraisals; pass courses; be observed by supervisor (report to SEI)

Training:

Existing SCAMPI A LAs: ½ to 1 day delta course

New SCAMPI B&C LAs: CMMI Intro and Intermediate and SCAMPI B&C SLAT courses



SCAMPI B&C Lead Appraisers-2

Renewal Requirements (SCAMPI A and B&C LAs):

SCAMPI A LAs: Lead 1 SCAMPI A appraisal and

- Participate in a combination of SCAMPI A, Arc Class B or C appraisals and/or other leadership activities*

SCAMPI B&C LAs: Lead 1 SCAMPI B appraisal and

- Participate in 1 SCAMPI A, , Arc Class B or C appraisals and/or other leadership activities

Upgrade to SCAMPI A LA:

Lead 1 SCAMPI B appraisal; participate in 1 SCAMPI A appraisal; pass A SLAT and be observed by SEI.

Reporting:

B/C Appraisal Disclosure Statement and SCAMPI B/C results

License Fees:

SCAMPI A LAs – No change in fees
SCAMPI B&C LAs – Fee TBD



SCAMPI B&C Program Schedule-1

SCAMPI B&C Handbook

- Draft May 2004
- Stakeholder review May-June 2004
- V1.0 Aug 2004

Delta LA Training

- Draft June 2004
- Pilot June-Aug 2004
- V1.0 Sep 2004

Formal B&C SLA Training

- Draft Oct 2004
- Pilot Oct-Nov 2004
- V1.0 Dec 2004



SCAMPI B&C Program Schedule-2

Appraisal Reporting System updates

- Design spec May 2004
- V0.1 June 2004
- Testing June-July 2004
- V1.0 on line Aug 2004



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